

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No.14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RANDHIR P.S. THAKUR and RONALD A. WEIMER

Appeal No. 2001-1562
Application No. 09/028,979

ON BRIEF

Before OWENS, WALTZ, and PAWLIKOWSKI, Administrative Patent Judges.

WALTZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the examiner's final rejection of claims 1 through 76, which are the only claims pending in this application. We have jurisdiction pursuant to 35 U.S.C. § 134.

According to appellants, the invention is directed to a method of processing wafers in a semiconductor fabrication system using rapid thermal processing (Brief,

1. A method of manufacturing semiconductor wafers in a processing chamber having at least one radiant heat source, said method comprising the steps of:

applying a predetermined amount of power to said at least one radiant heat source; and

positioning a wafer within said processing chamber;

wherein said predetermined amount of power applied to said at least one radiant heat source is set such that said wafer reaches a predetermined temperature in a predetermined amount of time for carrying out a desired process in said processing chamber.

The examiner has relied upon the following references as evidence of unpatentability:

Goodwin et al. (Goodwin)	4,874,464	Oct. 17, 1989
Mizuno et al. (Mizuno)	5,494,494	Feb. 27, 1996
Weimer et al. (Weimer)	5,634,974	Jun. 03, 1997

The following rejections are before us for review in this appeal:

(1) claims 1-76 under 35 U.S.C. § 112, paragraph two, as indefinite (Answer, page 3);

(2) claims 1-3 and 5 under 35 U.S.C. § 102(b) as anticipated by Goodwin (*id.*);

(3) claims 4, 6, 7 and 16-20 under 35 U.S.C. § 103(a) as unpatentable over

(6) claims 32-76 under 35 U.S.C. § 103(a) as unpatentable over Weimer in view of Goodwin (*id.*).

We *reverse* all of the rejections on appeal essentially for the reasons stated in the Brief, Reply Brief, and those reasons set forth below.

OPINION

A. The Rejection under 35 U.S.C. § 112, ¶2

The examiner states that the word “predetermined” as recited in the claims on appeal is indefinite (Answer, page 3). No reasons for this statement are given in the rejection but in the “Response to Argument” section of the Answer the examiner finds that the separate use of “predetermined” in three occurrences renders unclear the meaning of this word to one of ordinary skill in the art since the use of such a term three separate times for three separate parameters would have confused one of ordinary skill in this art (Answer, page 6).

It is well settled that, for any ground of unpatentability, the initial burden of proof rests with the examiner to establish a *prima facie* case of unpatentability. See *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The legal standard for definiteness of claim language pursuant to the requirements of section

examiner has not met the initial burden of establishing that the term “predetermined” as recited in the claims would render the scope of the claims unclear to one of ordinary skill in this art, when read in light of the specification. The examiner has failed to present any reasoning, much less convincing reasoning, why the word “predetermined,” whether recited once or more than once, would render the scope of the claims indefinite.

As correctly argued by appellants (Brief, page 8; Reply Brief, page 1), the specification includes guidance and examples of various times, temperatures and powers which were “predetermined” as necessary to carry out the claimed wafer processing method. Furthermore, the practice of rapid thermal processing (RTP) using radiant heat sources is admittedly well known in this art (Brief, page 8; specification, page 1), and thus it would have been expected that one of ordinary skill in this art could determine the times, temperatures and powers needed to carry out a particular desired wafer process. The examiner has not convincingly contested these arguments (Answer, page 6).

For the foregoing reasons and those set forth in the Brief and Reply Brief, we determine that the examiner has not met the initial burden of establishing that one of

B. The Rejection under 35 U.S.C. § 102(b)

For a proper rejection under section 102(b) for lack of novelty, it is incumbent upon the examiner to establish that every limitation recited in the claims is described, either expressly or under the principles of inherency, by a prior art reference. See *In re King*, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986). In the statement of the rejection on page 3 of the Answer, the examiner finds that Goodwin teaches a process for wafer manufacture where a “heat source” is used to preheat the chamber prior to loading of the wafer and running of the particular process.

Claim 1 on appeal does not recite a “heat source” but requires a particular heat source, namely “at least one radiant heat source.” As correctly argued by appellants, Goodwin clearly teaches a sole embodiment of using a radio-frequency heat source (Brief, pages 9-10; Reply Brief, page 2; see Goodwin, col. 4, ll. 26-28 and 48-49). Accordingly, the examiner has not shown that Goodwin describes every limitation in the claims and the rejection under 35 U.S.C. § 102(b) cannot be sustained.

Again, the “reasoning” behind the examiner’s rejection is not found in the statement of the rejection but instead is found in the “Response to Argument” on page 7 of the Answer. Here the examiner apparently attempts to refer to the disclosure of

col. 5, ll. 22-32, as cited on page 7 of the Answer; see also Goodwin, col. 1, ll. 6-14; col. 3, ll. 39-48; and col. 4, ll. 41-44). However, we note that these applications are *not* incorporated-by-reference into Goodwin, the examiner has not identified what references are being relied on or what portions of these references are relevant, and finally the examiner has not listed Crabb and/or Ozias as prior art of record (Answer, pages 2-3, ¶(9)). Accordingly, on this record, we determine that the examiner has not met the initial burden of establishing that every limitation recited in the claims was described in Goodwin. Therefore the rejection under 35 U.S.C. § 102(b) cannot be sustained.

C. The Rejections under 35 U.S.C. § 103(a)

As previously stated, it is well settled that the examiner bears the initial burden of establishing unpatentability on any ground. See *Oetiker, supra*. As discussed above, Goodwin is deficient since this reference only discloses and teaches rf heating, not a radiant heat source. Since Goodwin is employed by the examiner in every rejection on appeal based on section 103(a) to show preheating a chamber by a radiant heat source before processing of the wafer (Answer, pages 4-6), all of the rejections based on section 103(a) cannot be sustained for the reasons noted above.

Even assuming *arguendo* that Goodwin was correctly applied by the examiner, we determine that the examiner has not established a *prima facie* case of obviousness for any rejection based on section 103(a) for the following reasons. With respect to claim 7, the examiner has not explained why the claimed limitation that the power remains substantially constant would have been obvious when Goodwin specifically teaches the use of “fluctuating power” (Goodwin, col. 4, l. 48; see the Brief, pages 11-12). With regard to claims 16-20, the examiner has merely presented a conclusion that creation of an isothermal cavity would have been obvious but cites no evidence supporting this conclusion (Answer, pages 4 and 8). See *In re Lee*, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002). Similarly, with respect to claims 8 to 15, the examiner merely concludes that it would have been obvious to introduce a second wafer in Goodwin without any supporting evidence or technical reasoning (Answer, paragraph bridging pages 4-5). Such conclusions unsupported by facts or convincing technical reasoning cannot be sustained. See *Lee, supra*.

With regard to the rejections under section 103(a) based on a combination of references, it is incumbent upon the examiner to show a motivation or suggestion for combining these references. See *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d

convincing evidence or suggestion for incorporating the preheating of Goodwin in the divergent processes of Mizuno or Weimer other than the general statement “in order to reduce processing times.” Answer, pages 5 and 6. The examiner has not shown that either primary reference discloses or suggests preheating of any kind. Thus the generalized statement of motivation presented by the examiner is not convincing. See *Dembiczak, supra*.

For the foregoing reasons and those stated in the Brief and Reply Brief, we determine that the examiner has not established a *prima facie* case of obviousness in view of the reference evidence. Accordingly, all of the examiner’s rejections based on 35 U.S.C. § 103(a) are reversed.

D. Other Issues

Upon return of this application to the jurisdiction of the examiner, the examiner and appellant should review the patentability of at least claim 1 in view of Goodwin and Ozias, U.S. Patent No. 4,846,102 (referred to at col. 3, l. 46, of Goodwin). As discussed above, Goodwin teaches the process recited in claim 1 on appeal with the exception of the particular claimed heating source. Goodwin teaches rf preheating of the process chamber (col. 3, ll. 57-68; col. 4, ll. 26-28). Ozias, directed to an epitaxial

motivation or suggestion to one of ordinary skill in the art to employ the equivalent heating source. See *In re Fout*, 675 F.2d 297, 301, 213 USPQ 532, 536 (CCPA 1982).

E. Summary

The rejection of claims 1-76 under 35 U.S.C. § 112, ¶2, is reversed. The rejection of claims 1-3 and 5 under 35 U.S.C. § 102(b) over Goodwin is reversed. The rejection of claims 4, 6, 7 and 16-20 under 35 U.S.C. § 103(a) over Goodwin is reversed. The rejection of claims 8 to 15 under 35 U.S.C. § 103(a) over Goodwin is reversed. The rejection of claims 21 to 31 under 35 U.S.C. § 103(a) over Mizuno in view of Goodwin is reversed. The rejection of claims 32 to 76 under 35 U.S.C. § 103(a) over Weimer in view of Goodwin is reversed.

The decision of the examiner is reversed.

REVERSED



TERRY J. OWENS
Administrative Patent Judge

THOMAS A. WALTZ
Administrative Patent Judge

BEVERLY A. PAWLIKOWSKI
Administrative Patent Judge

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